

## RESPONSE TO OFFICE ACTION

### A. *Status of the Claims*

Claims 1-31 were pending. The Office has acknowledge the subject matter recited in claims 12, 13, 20, 21, 24, 25, and 29-31 is allowable. Claims 1, 9, 18, 21, and 27 have been amended for clarification purposes and do not narrow the scope of the claims. Claim 14 has been canceled. Therefore, claims 1-13 and 15-31 will be pending upon entry of these amendments.

### B. *Specification Objection*

The disclosure stands objected for informalities. The Specification has been amended to include the missing U.S. Patent Application serial number on page 2, line 28. Accordingly, Applicants respectfully request that the objection to the Specification be removed.

### C. *Claim Objection*

Claim 21 stands objected for informalities. Claim 21 has been amended as suggested by the Examiner. The removal of the objection to claim 21 is respectfully requested.

### D. *Double Patenting*

Claim 14 stands objected to under 37 C.F.R. 1.75 as being a substantial duplicate of claim 13. Claim 14 has been deleted, rendering the objection moot.

### E. *Section 102 Rejections*

Claims 1-11, 15, 16, and 17 stand rejected under 35 U.S.C 102(e) as being anticipated by U.S. Patent No. 6,565,727 to Shenderov. The Office admits that the cited anticipatory reference does not disclose that the resulting forces created by electrical signals applied to the one or more electrodes are dielectric forces nor does the cited reference disclose a dielectric gate. (Office

Action, page 4). However, the Office suggests that the Shenderov reference implies that the forces created by the electrodes are dielectric forces to pull liquids. (Office Action, page 4). In addition, the Office relies on U.S. Patent 5,486,337 to Okhawa and the publication "Electrostatic Actuation of Liquid Droplets for Microreactor Applications" by Washizu in an attempt to show a possible technique for which the electrodes used by Shenderov may be configured to allegedly create dielectric forces that act upon droplets. Applicants respectfully traverse.

Amended independent claims 1 and 9 each require one or more electrodes driven by inhomogeneous AC signals for drawing fluid from an inlet fluid pathway to an outlet fluid using dielectrophoretic forces. Support for the amendments may be found, for example, in the Specification on page 18, lines 24-27 and page 37, lines 17-38. In contrast, the Shenderov reference discloses electrowetting techniques to manipulate droplets. A wetting potential is applied to an electrode, converting the hydrophobic surface on top of these electrode to hydrophilic so that the liquid is pulled by a *surface tension gradient*. (Column 2, lines 60-65 and Abstract. Emphasis added).

The Okhawa reference, relied upon by the Office, does not show that a surface tension gradient anticipates or suggests a dielectrophoretic force. The Okhawa reference discloses using an electrostatic force on an electrically charged droplet to manipulate the droplet with an electrostatic field. (Column 3, lines 52-54). The electrostatically charged droplet is "under the influence of gravitational force, surface tension, electrostatic force, and adhesive force." (Column 3, lines 57-60). To move the droplet, the Okhawa reference discloses applying an electrostatic force to peel or roll the droplet off a surface. (Column 6, lines 25-35). The Okhawa fails to disclose the droplet being manipulated by a dielectrophoretic force arising from inhomogeneous AC signals. Further, the Washizu reference does not support the Office's contention that the forces created by the electrodes in the Shenderov reference is a dielectrophoretic force. Washizu discloses actuation of a droplet is achieved by inducing a charge the droplet surface. Field lines connecting energized electrodes and the induced charge creates a Maxwell stress and, as a result, drives the droplet in a direction. (Page 733, second paragraph).

As such, Applicants submit that no evidence is provided to indicate that any cited art anticipates or even renders obvious the pending claims. Applicants respectfully submit that the

Examiner has not carried the PTO's burden in establishing that the reference teaches all the limitations of the present claims. *In re Marshall*, 198 USPQ 344 (CCPA 1978) ("... [T]o constitute anticipation, all material elements recited in a claim must be found in one unit of the prior art.").

It is clear that the cited anticipation reference does not disclose or suggest applying inhomogeneous AC signals to draw fluid from an inlet fluid pathway to an outlet fluid pathway by using dielectrophoretic forces as required by amended claims 1 and 9.

For at least the above reasons, independent claims 1 and 9, and their respective dependent claims are patentably distinct over the cited reference. Applicants respectfully request the removal of the §102 rejection.

*F. Section 103 Rejections*

Claims 18, 19, 22, 23, 26-28 stand rejected under 35 U.S.C § 103(a) as being unpatentable over Shenderov. Again, the Office relies on the teachings of Okhawa and Washizu. Applicants respectfully traverse.

Amended independent claim 18 requires one or more electrodes driven by inhomogeneous AC signals for drawing fluid from an inlet fluid pathway to an outlet fluid using dielectrophoretic forces. Similarly, amended independent method claim 27 requires applying inhomogeneous AC signals to one or more electrodes for drawing fluid from an inlet fluid pathway to an outlet fluid pathway by dielectrophoretic forces. In light of the comments of this Response and amendments to independent claims 18 and 27, Applicants assert that Shenderov does not disclose or suggest drawing fluid from an inlet fluid pathway to an outlet fluid pathway using dielectrophoretic force, as required by independent claims 18 and 27. For at least this reason, claims 18 and 27, and their dependents claims are patentably distinct over the cited reference. Applicants respectfully request the removal of the § 103 rejection.

### PETITION FOR EXTENSION OF TIME

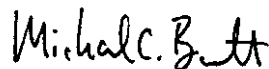
Pursuant to 37 C.F.R. § 1.136(a), Applicants petition for an extension of time of two-month up to and including May 10, 2004 (May 8, 2004 falls on a Saturday), in which to respond to the outstanding Action. A check in payment of the small entity petition fee for a two-month extension of time (\$210.00) is enclosed. Should any additional fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to the enclosed materials, or should an overpayment be included, the Commissioner is authorized to deduct or credit the appropriate fees to or from Fulbright & Jaworski Deposit Account No. 50-1212/UTSC:734US/MCB.

### CONCLUSION

Applicants believe that the foregoing remarks fully respond to all outstanding matters for this application. Applicants respectfully request that the rejections of all claims be withdrawn so the claims may swiftly pass to issuance.

Should the Examiner desire to sustain any of the rejections discussed in relation to this Response, the courtesy of a telephonic conference between the Examiner, the Examiner's supervisor, and the undersigned attorney at 512-536-3018 is respectfully requested in advance.

Respectfully submitted,



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Date: May 10, 2004